

Studying Perception¹

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0. Preliminary Remark

The present essay is an attempt to elucidate the conceptual background of empirical studies of perception. For it seems that the study of perception must involve certain background assumptions that are seldom made explicit and often in fact denied. The aim of this essay is *not* to tell neurobiologists to change those background assumptions, nor indeed to tell them at all what they should do. Rather it addresses those (philosophers, neurobiologists, psychologists, and others) who *interpret, discuss, and write about* what neurobiologists do. The study of perception seems to be one of those areas where many of us are tempted, for philosophical reasons, to insist on descriptions that fly in the face, not only of everyday experience, but of existing scientific practice as well.

Here I will chiefly do the following things: (1) make a general methodological point about the use of mind-related concepts in studies of the mind; (2) elucidate this by way of a discussion of recent objections raised by Paul Churchland to *The Philosophical Foundations of Neuroscience*, a book by M. R. Bennett and P. M. S. Hacker; (3) finally, I will use an example from Descartes to elucidate my point further.

1.i. Methodological Remark: 'Inside' vs. 'Outside' Understanding

At least one important part of the philosophy of mind should treat the use of mind-related concepts in non-technical contexts. (I would go as far as saying that this is the most important part; but that is not essential for the present argument.) In other words, there will be use for analyses of how we normally use concepts like 'seeing', 'feeling', 'believing', 'intending', 'meaning', 'representing', 'producing a mental image', etc..

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However, at present such studies have not had much of an impact on cognitive science or neurobiology, nor indeed on philosophy. According to one typical view, such inquiries are somewhat beside the point. Mind-related concepts of ordinary language rely on folk theoretical assumptions that may turn out to be mistaken. Our present words and their usage may need revision in the light of new empirical findings. The task of a scientific study of the mind, on this view, is not to vindicate folk conceptions, but rather to find out what it really *is* to see, feel, believe, intend, and so on.²

At best the study of everyday mind-related concepts is, then, seen as nothing more than a possibly useful preliminary to an actual investigation of *the nature of* mental phenomena. An additional reason for scepticism is no doubt the feeling that we more or less know anyway how mind-related concepts are used in everyday situations.

Now I would say first of all that the idea that folk theories, or any theories, lie behind our everyday use of mind-related concepts is for the most part confused – as, for instance, Robert A. Sharpe has argued.³ These concepts are not only employed for prediction or theoretical explanation of behaviour but, more importantly, they are *constitutive of* the sense that we make of our meaningful activities. – However, this is obviously a large topic that needs a separate discussion. For the purposes of the present essay, it is not necessary to arrive at a specific view on this.

But secondly, it *is* true in one sense that neurobiologists and cognitive scientists already know how we usually speak of ‘seeing’, ‘feeling’, ‘believing’, etc.. Thus their frustration at suggestions of further inquiry would be understandable. They know all this, not because they are scientists but because they are human beings. Simply by virtue of being fully socialised adults they, like the rest of us, will have a good practical grasp of everyday

² E.g., Churchland 1981, Carruthers 2000, 119, 185 (fn 3).

³ Sharpe 1991.

mind-related concepts. However, this does not necessarily mean that the scientists have a clear picture of how these concepts relate to their own studies.

The situation is in fact analogous to that of the social sciences, as analysed by Peter Winch in 1958. In *The Idea of a Social Science and Its Relation to Philosophy*, Winch compared the situations of a natural and a social scientist. For both, their ability to conduct meaningful empirical studies depends on their employment of what Winch called 'judgments of identity'. They must be able to say, of two phenomena, that they fall under the same description (i.e., that they are, in some respect, instances of the same thing) in order to include them both as instances of some generalising statement of the kind that they would advance.

But there will be a difference between the natural and the social scientist. Identity judgments by the natural scientist will need to take account of prevailing theory and tradition within his field, say nuclear physics. But the sociologist will investigate a situation where, *moreover*, the research subjects themselves already have ideas about the situation at hand. And *their* ways of identifying the situation will shape their behaviour. Thus, in Winch's words,

The concepts and criteria according to which the sociologist judges that, in two situations, the same thing has happened, or the same action // performed, must be understood *in relation to the rules governing sociological investigation*. But here we run into a difficulty; for whereas in the case of the natural scientist we have to deal with only one set of rules, namely those governing the scientist's investigation itself, here *what the sociologist is studying*, as well as his study of it, is a human activity and is therefore carried out according to rules. And it is these rules, rather than those which govern the sociologist's

investigation, which specify what is to count as ‘doing the same kind of thing’ in relation to that kind of activity.⁴

Perhaps I should add that the main point in this context has to do with the frame of reference for one’s ways of identifying and individuating social phenomena – *not* with the exact role of rule-following in all this.⁵

Winch draws first of all the conclusion that, in order to study meaningful behaviour at all, the sociologist must have some, as it were, *inside understanding* of the type of behaviour she is looking at; that is, an understanding of how the relevant phenomena are understood by agents themselves. If you write, say, on the sociology of art you must have some aesthetic sense in order to grasp the concerns and choices that face artists and their public. – This obviously underscores the importance of ‘participatory’ approaches to social research.

However, a second lesson we can gather from Winch’s argument is that all social research worth the name already *is* ‘participatory’ at least in a minimal sense. When a sociologist identifies human behaviour in one way rather than another (e.g., as artistic activity) *ipso facto* she employs her existing understanding of the type of meaningful behaviour in question. Positivist social scientists were simply not aware of the ‘inside understanding’ that they both possessed and employed. But for this reason – as they *thought* they were simply describing data out there – they ran the risk of unreflectively imposing their prejudices on the material. – The conclusion is actually that there is no clear separation between ‘positivist’ and ‘understanding’ social science. All social science insofar as it concerns social phenomena at all, *will* involve a minimum of ‘understanding’ in a hermeneutic, humanistic sense, even if the positivist’s official story is different. What one

⁴ Winch 1958/1990, 86-7. Italics in the original.

⁵ Also see Winch’s introduction to the 1990 edition of his book (*ibid.*, ix-xviii).

needs is greater awareness of what one is doing. Such awareness may then translate into more appropriate research designs and theorizing.

1.ii. Methodological Remark: Explaining Perception

The thesis of the present paper is that there is an analogy to be drawn between this discussion and the present state of cognitive and neurobiological studies. Perhaps surprisingly, the neurobiologist falls on the same side of Winch's methodological divide as the sociologist. The neurobiologist possesses 'an inside understanding' of the phenomena she is researching – say, perception. This is the everyday understanding of perception she has acquired by living in a world where we orient ourselves by using our senses; by being one such person herself; and by participating in a community of speakers who employ these concepts.

Neurobiologists, psychologists and philosophers who study perception thus in some sense already know, from the outset, what it is to perceive something. Not only can they usually *do* the things that they are studying (such as seeing and hearing and touching, and more specifically, distinguishing between colours, pitches, temperatures, distances, objects, movements, etc.). They also have a conception of what kinds of thing one may sensibly say about perception, and what kinds of claims can be justified through references to it. And they use this understanding in their research as they *identify* the relevant phenomena. Thus everyday understanding is at least implicit in the very starting points of their research.

To mention an important example of such shared understanding, consider some ways in which perception functions as a source of knowledge. We agree that your report of what you have seen may be used as evidence in a court of law; while your reports of hallucinations and dreams typically cannot – even though in some circumstances it will be important for the court to know *that* you have been hallucinating. And, connecting to this: several people may have seen or heard the same thing; and the same thing may have been

observed from different distances and perspectives. Disputes about what different witnesses have seen will also be disputes about some object, fact or event other than simply the *witness himself* and what inner experiences *he* has had. Thus there is typically no neat distinction between questions about someone's perception and about what there was to perceive.

In such cases, and indeed typically, the relation between reports of perception and reports of the relevant facts is *internal*. This means that 'perception' functions as what one might call 'an achievement term'. By 'perception' we mean *successful* perception, or the taking in of facts that are there to perceive, in the same way as 'seeing' and 'understanding' paradigmatically refer to successful cases.⁶ Perception is distinguished from illusion and mistakes – in witness boxes, laboratory experiments, and elsewhere – by looking for correspondences between what the witness thinks he has perceived and what we know, on other grounds, that there was to perceive. It can be true that the witness saw the Queen walking down the street only if it is true that the Queen was there. (On the other hand, he may have *thought* he saw the Queen or, in a different kind of case, he may have seen the Queen without knowing about it.) This is an aspect of the 'aboutness', or intentionality, of perception; in other words, of the fact that perception is *of* an object, a fact or event.

Concerning this point, first of all it should be noted that a scientific account of perception that does not *preserve* such crucial features of perception concepts will not be an account of the activity that is normally called *perception*. (Perhaps such accounts may describe *other* processes more or less closely related to perception – say, dreams. In that case it remains to explicate precisely how they are related.)

⁶ This does not rule out other uses such as, 'NN is often perceived/seen/understood as slow, but he is just very careful'. The point is that crucial uses of 'perceiving/seeing/understanding' are not like this.

This is why it would, e.g., constitute *reductio ad absurdum* to give an account of perception that shows we *cannot* be aware of our immediate physical surroundings, or one that shows that two observers are never aware of the *same* object. Nevertheless such accounts are surprisingly influential. In *Descartes' Error*, Antonio Damasio writes,

If you look out the window at the autumn landscape, or listen to the music playing in the background, or run your fingers over a smooth metal surface, [...] you are perceiving, and thereby forming images of varied sensory modalities. The images so formed are called *perceptual images*.

[...//... Perceptual images] are constructions of your organism's brain. All that you can know for certain is that they are real to your self, and that other beings make comparable images. [...] If our organisms were designed differently, the constructions we make of the world around us would be different as well. We do not know, and it is improbable that we will ever know, what "absolute" reality is like.⁷

The quoted passages start with a common-sense description that takes perception for granted. You are not imagining, remembering or hallucinating the landscape outside your window. This gives us the distinction between 'perceptual' and 'recalled' images.⁸ But further down, the description implies you actually have no way of knowing that the initial description is true, as all these 'images' are just constructions of your brain.⁹ This in fact

⁷ Damasio 1996, 96-97.

⁸ Damasio 1996, 96-97.

⁹ The last quoted sentence (about our probable ignorance of "absolute" reality') is presented as if it was a conclusion from the preceding argument. But in one sense – as a conjecture of empirical character – the claim has already been *falsified*. There are scientific descriptions of physical phenomena that are (relatively) independent of any sensory modality (e.g., accounts of how sound is produced by vibrations). On the other hand, if the author is making the (Kantian?) claim that there is an absolute limit to human cognitive powers, then that will be a misleading formulation of a philosophical point. An idea of "absolute reality" has no fixed meaning, to be identified once and for all, regardless of the relevant context of inquiry. The point, more

collapses the initial distinction between perception and hallucination. Nor are you told why you should believe that other beings exist at all or, indeed, that your brain exists. Yet Damasio's argument as a whole relies on the initial description. It exploits our tacit commitment to what it moves on to deny.

However, here one may imagine the following objection. It is true that Damasio's is not an account of perception as that is normally understood. But might it not be that this concept, *as normally understood*, just involves serious confusion? And if that is right, while what is produced is not an account of *perception*, perhaps this is simply because there is no coherent account to be given of *that*? Even if the everyday conception is the starting point of the inquiry, is there any reason to trust that the eventual results will preserve the assumptions that furnish the starting point?¹⁰

This objection can be met without developing an argument to legitimize our present everyday concept of perception. One only needs to rehearse the *actual* points of agreement between Damasio and the everyday conception. The crucial one lies in how both *individuate* the relevant phenomena. It is already agreed that perception, as opposed to dreaming, imagination, and hallucination, means getting in touch with an environment that is somehow independent of the subject. It is also agreed that there are, for the most part, intersubjective ways to establish what there is for a person to perceive.

Here the analogy with Winch's argument is especially illuminating. The scientist must make 'judgments of identity' in order to pick out instances of what should count as 'the same phenomenon'. Certain occurrences will be described as instances of seeing, hearing, or touching, and others as mere hallucination or mental imagery. But this is not because

correctly stated, is that there *is no such thing* as describing what reality, say, *looks like* apart from describing what it would look like to someone who is *looking*.

¹⁰ Questions raised by David Cockburn.

the scientist in question has studied the mind sciences but because she is a human being, familiar with the general role of perception in human life.

In other words: first, the scientist identifies a particular instance of perception on a common-sense basis. Someone knocks at the door and we hear it. *Afterwards*, there is an investigation of the acoustic and physiological processes involved in this event. We can ask questions about those processes because there is consensus about what it (roughly) means to hear something.

A significant part of neurobiology consists in keeping track of the causal processes that enable perception to happen. In the case of hearing, a vibrating object causes the air to vibrate, the air causes the eardrum to vibrate, and physiological changes stimulated by the vibrations are eventually transmitted to different parts of the brain. The study of dysfunctions will obviously be important for tracking the causal chains more exactly. But in the background there is the normal case where the subject *is able to* hear correctly. Given this overall picture, the normal brain is described as a functional system that enables normal hearing to occur.

Obviously this is nothing new in neurobiology, only it is not always made explicit. The neurobiologist is not studying brain processes at random. The neurobiologist's description of the processes of hearing presupposes that *some* causal relations between the sound source and various parts of the auditory system(s) will be singled out as belonging to the relevant 'causal chains'. Pathways in the brain may be identified. Vibrations in the object must eventually result in changes in the subject's brain, but the changes must also be brought about in the right way. For instance, if *the brain* is caused to vibrate this will result, not in auditory perception, but in injury or death. The physiological changes at hearing sounds must 'correspond to' the relevant sounds. And they must correlate with the subject's ability to make discriminations of the pitch, the volume, location, and other relevant characteristics.

Still expressing this in another way: neurobiological descriptions of perception do not reduce mental events to physiological processes. In fact they *cannot* do so because the phenomena that they describe are themselves *individuated* on the basis of mental¹¹, not physiological criteria. Thus the method itself excludes reduction.¹² In another sense, it may actually be said that the neurobiologist explains physiological data in terms of perception rather than the other way around. She makes sense of the unknown, namely the role of certain physiological changes, by relating it to what is known, namely perception.

I.iii. Blindsight

The present suggestion is then that everyday conceptions of seeing, hearing, touch, etc., as represented in ordinary language, are the necessary starting points for the neurobiological study of perception.

One might object again and maintain, on the contrary, that current research in neurobiology has seriously undermined traditional conceptions. For instance, consider the condition known as blindsight.¹³ Due to brain damage, the blindsighted patient does not have (conscious) visual experiences from parts of her visual field. In experimental situations she nevertheless reacts as if she could see the things that are ‘shown’ to her in the ‘blind’ areas. This demonstrates, it has been argued, that perception does not necessarily involve conscious experience¹⁴ or that ‘phenomenal consciousness’ is distinct

¹¹ By ‘mental criteria’ I refer to the fact that descriptions of what a person sees, hears, etc., belong to descriptions of what goes on in that person’s mind. This is not to contrast ‘the mental’ with ‘behaviour’, as it seems to me that these categories are internally related (see e.g., Wittgenstein 1953, I: §§ 244, 257, 281, 293-294, 304).

¹² A related point on the status of reduction is made by Nagel (1974, 445).

¹³ Described e.g. by Goodale and Milner 2004. Supposed philosophical implications are discussed by Carruthers 2000, 148, 155 – 161; Revonsuo 1995, 19-21, 25.

¹⁴ Carruthers 2000, 148.

from 'cognitive processes'.¹⁵ Can these findings be accommodated with received ideas about visual perception?

Neurobiologically, blindsight is explained by the existence of two visual systems in the brain. Two pathways (known as the ventral and dorsal streams) lead from the primary visual cortex to separate parts of the brain (the inferior temporal lobe and the posterior parietal lobe, respectively). The one stream can be described as resulting in 'vision for conscious¹⁶ perception' and the other in 'vision for action'. Damage to the one but not the other will result in the impairment of the one, but not the other, aspect of vision. – Goodale and Milner sum up the results of this research:

Essentially, we see the ventral stream as supplying suitably abstract representations of the visual world [= 'vision for conscious perception'], which can then not only serve to provide our immediate visual experience but also be stored for future reference. By this means the ventral stream enables the brain to create the mental furniture that allows us to think about the world, recognise and interpret subsequent visual inputs, and to plan our actions 'off-line'. In contrast, we see the dorsal stream as acting entirely in real time [= 'vision for action'], guiding the programming and unfolding of our actions at the instant we make them; thus enabling the smooth and effective movements that allowed our primate ancestors to survive in a hostile and unpredictable world. In short, ours is a distinction between vision for perception and vision for action.¹⁷

¹⁵ Revonsuo 1995, 21. – However, see Schumacher 1998.

¹⁶ Here I am departing from Goodale & Milner (see below), who simply speak of 'vision *for perception*'. I wish to signal the possibility of including Goodale & Milner's both aspects of vision as parts of 'perception'. This is a choice of terminology that should not prejudice the further argument in any way.

¹⁷ Goodale & Milner 2006, 661.

The authors note that this contradicts what may look like a natural assumption, namely, that *one* visual experience corresponds to *one* visual system.

But while this implies constraints on theoretical (and speculative) work, it still does not involve a revision of the concept of seeing. On the contrary, the quoted description is obviously *using* the commonsense concept. It describes the role of sight in terms of the agent's ability to get in touch with a surrounding reality. Research designs allow the scientist to discover how aspects of this ability may be impaired, thus rendering sight incomplete in various respects. Indeed the very importance of the reported findings lies in the fact that they help us understand the mechanisms of the *achievement* we call visual perception.

It is true, however, that the experimental results highlight an aspect of visual perception that has, at times, been overlooked in the theoretical literature: namely, the fact that seeing also involves practical engagement with one's surroundings. More will be said about this in the sequel.

2.i. Representation, and Churchland, and Bennett & Hacker

Cognitive scientists and neurobiologists generally subscribe to the theory that, in perception, the perceiving agent's brain creates *representations* of whatever he or she perceives.¹⁸ The idea is that the presence of a representation in the brain accounts for the fact that we are able to perceive.

In their book, M.R. Bennett and P.M.S. Hacker criticise the idea that the brain might contain representations.¹⁹ This idea, they argue, would presuppose that someone inside the brain *perceives the representations* (as when someone reads a map) and interprets the

¹⁸ Slaby et al, 2006, 105; e.g., Damasio 1996, 90, 98-100.

¹⁹ Bennett & Hacker 2003, 143; cf Churchland 2005, 469.

symbols employed in them in accordance with a set of conventions.²⁰ This, they maintain, is to commit a so-called ‘mereological fallacy’; that is, the mistake of ascribing to the brain, or to parts of it, capabilities that can only properly be attributed to entire living beings.

One problem here is that empirical neurobiologists are unlikely to be moved merely by the imputation of a ‘fallacy’ as long as they find that the notion of representation is *helpful* in their research.

In reply to the accusation of mereological fallacy, Churchland refers to a mechanism that helps an animal (a cat) to react to sudden changes in the visual, auditory, or tactile input by redirecting its gaze accordingly.²¹ He argues it would be natural, in the context, to speak of a part of the brain as discovering a change and then redirecting the animal’s gaze (activities that Bennett and Hacker would only ascribe to the entire living being). Similarly, Churchland points out that computers already work with symbols, without that implying that there is a conscious being inside the machine to read the symbols.²² He claims, furthermore, that it has already been possible to locate neural maps in the brain (in the Superior Colliculus).²³

Churchland argues that the meanings of given concepts – including the concepts of representations, maps, and symbols – are simply not as rigid as Bennett and Hacker make them out to be. Bennett and Hacker, he says, have set up a *current* usage as the norm while they should really be attending to the *new* meanings that these concepts acquire in cognitive neuroscience.²⁴

²⁰ Bennett & Hacker 2003, 80.

²¹ Churchland 2005, 470-471.

²² Churchland 2005, 469-470.

²³ Churchland 2005, 470.

²⁴ For Bennett & Hacker’s replies to objections of this type, see Bennett & Hacker 2006.

À propos of representations, Churchland also points out an empirical finding that looks astonishing to non-neurobiologists, even if it does not directly furnish a philosophical argument against Bennett and Hacker. – Remember that Descartes thought the brain helps the soul see via the projection of actual physical images onto a part of the brain, from which the soul retrieves them.²⁵ This is not usually taken very seriously, as philosophers do not generally believe there are physical images in the brain. However, in an experiment, a monkey was made to look at a flickering geometrical pattern. The animal was disposed of; but in its primary visual cortex one could find an activation pattern that may well be called a physical image of the thing it was looking at.²⁶

Strictly this does *not* constitute an argument against Bennett and Hacker. The brain trace apparently functions as a causal intermediary between two parts of the brain. The trace is presumably necessary for perception. But this does not imply that its visual likeness with the original (which is, in any case, limited) is of importance as such. What is important from the point of view of perception is its causal efficacy. One could call the activation pattern a trace, in the same way as a shoe may leave a trace on a carpet. Just as a detective may, from the footprint, find out who was standing in the room, the neurobiologist may, from the trace, find out what the monkey was looking at.

Are the traces on the carpet and in the brain then *representations*? To say that a thing represents another is perhaps to say that the one thing is made to stand proxy for the other; or perhaps, that it is employed by someone to convey an idea of the other thing or to find out something about it. (These are certainly valid descriptions of ‘representation’ in some contexts.) The traces represent something to the detective and to the neurobiologist. Thus it is very natural for the neurobiologist to say that the monkey’s primary visual

²⁵ Descartes, *Passions of the Soul*, I: 31.

²⁶ The picture, from Roger Tootell, is reproduced in Churchland 2005, 467 and in Damasio 1996, 104.

cortex contained a representation. *She* may use the trace to derive information about what the monkey was looking at.

Bennett and Hacker reply that also a dendrochronologist will use the concentric layers inside a tree trunk to derive information about summers and winters in the past, without that implying that information is encoded in them.²⁷ But the fact remains that using the concept of representation looks like a potentially useful way to handle certain questions about neural activation patterns – or about tree trunks and footprints. Thus while Churchland's example does not constitute a proof that there 'are' representations in the brain, it does make one wonder why it would *have* to be nonsensical to use this kind of language.

What we need to see here is that there is no context-free answer to the question whether or not one thing should be called a representation of another. Our use of the term 'representation' is indicative of the kind of interest we have in the items in question. The question is then not whether the brain 'really' contains representations but rather, what are the possible gains and confusions that this way of talking may produce in various contexts. Thus the question is not analogous to an empirical question such as, 'Are there such-and-such neural activation patterns in the brain?', nor yet to the metaphysical question, 'Does consciousness reside in the brain?'. It is more akin to the question, 'Will *this* be a good way, in *these* circumstances, to look for regularities in the functioning of the brain?'. To some extent, it must be left to the neurobiologist to choose the terms that she is comfortable with.

It may (note: *may*) be useful to speak of representations in the brain. But it is important to see why this should be. In a study of perception, clearly not all traces of causal influences on the brain will be called representations, but only those that are supposed to contribute

²⁷ See Bennett & Hacker 2006, 6.

to perception in the case under investigation. (Brain damage will not be called a representation of the thing that hit me on the head. Increased brain activity will typically not be described as a representation of coffee, etc.) In the experiment just cited, the neurobiologist *looks for* a likeness. And she is in fact *producing* the visual likeness by dyeing brain tissue in a suitable way. The idea that the brain activation pattern constitutes a representation belongs to a general picture where the overall role of perception for the animal is taken to be self-evident. The animal is using its senses to find out things about its surroundings. Speaking of a representation is meaningful in the context of such teleology.

In the neurobiological application of this picture, the brain is seen as a functional device (a tool) that the animal employs.²⁸ Such neurobiological approaches are perhaps not very different from a doctor's functional understanding of other animal organs such as eyes and ears, or the heart or the liver. The organs are expected to perform certain tasks, which is the more or less obvious starting point for physiological studies of them. The 'tool' metaphor has, on the other hand, also some obvious limitations.²⁹ For instance, it is not possible to elaborate the metaphor in a way that intelligibly specifies a *user*, in any way closely analogous to the human user of a tool. But this simply means that one must be careful, not that the metaphor must always be out of place. In any case, nothing is a tool 'as such'. The question to be addressed is not whether these organs are 'really' tools but

²⁸ Cf. Damasio 1996, 90: "To a first approximation, the overall *function* of the brain is to be *well informed* about what goes on in the rest of the body, the body proper; about what goes on in itself; and about the environment surrounding the organism, *so that suitable, survivable accommodations can be achieved* between organism and environment" (italics added). – In Chapter 6 (ibid., 114-126), the role of the brain is described in terms of ensuring the animal's survival. See esp. 116-117.

²⁹ Cf.: 'As long as we use technical models in biology without being fully aware that by applying these models we just imply that nature performs according to the projected human requirements and guidelines, we are "blind for the significance" (*bedeutungsblind*) as Jakob von Uexküll expressed it' (Thure von Uexküll, In: *Kompositionslehre der Natur. Biologie als undogmatische Naturwissenschaft. Ausgewählte Schriften Jakob von Uexkülls*. Hrsgg. u. eingeleitet von Thure von Uexküll. Frankfurt a.M.: Ullstein), p 42. Quoted and trans. by Rütting, forthcoming.

rather, 'What is achieved or lost if, for the purpose of the investigation, they are treated as tools?'. The point I am making is that the activity of the brain is here analysed in the light of its *task* of contributing to perception. The nature of perception itself is taken as the unquestioned background of the study.

2.ii. *The 'Nature' of Perception vs. the 'Nature' of Water*

Summing up again, the neurobiologist will address questions like, 'What is happening in the brain when we are perceiving?', 'What brain processes are necessary for perception?', *not*: 'What *is* perception?'. The latter question falls outside science. Not because there cannot be good answers, but rather because the neurobiologist must start on the assumption that the question has already been dealt with.

The question 'What is perception?' is, in this context, not analogous to 'What is water?' where the answer is 'H₂O'. It is more like the question 'What is water?' when the answer is an explanation of what *is meant by* 'water'. This involves, for instance, describing the taste and look of water and where to find it, or giving someone a sample, or telling them that ice in one sense is water and in another is not; or that sea water *is* water while milk *contains* water; and so on.

'The nature of water' is in one sense explained by describing its chemical makeup. That will, for instance, explain why water is a liquid that freezes at 0 °C, expands when frozen, dissolves some substances but not others, etc. On the other hand, the question what is meant by 'water' concerns 'the nature of water' in another sense. Not everything that is correctly called 'water' outside technical contexts is H₂O and nothing but H₂O. Yet this does not cause major philosophical confusion. This is because there is no uncertainty about the general *kind* of thing that is meant. Water is a material substance and there are established ways to discuss and find out what a substance consists of.

‘The nature of perception’ is also in some sense explained scientifically, or in terms of the functioning of the sense organs and the brain. For instance, such descriptions will explain the fact that only certain frequencies of vibrations are audible to humans; and they may explain dysfunctions like blindsight. This reflects the understanding that perception may be studied by investigating how the sense organs are affected causally and how they in turn influence the rest of the nervous system. However, this understanding does not yield anything similar to the definition of water as H₂O. It does not lead to the conclusion, ‘Perception *is* the process where sense organs are affected causally and in turn influence the rest of the nervous system’. Neither the neurobiologist nor anyone else would call all such processes ‘perception’. One might try to add qualifying clauses like ‘perception is the process where the sense organs are affected *in the relevant sense*’; but here one would just be taking for granted that everyone already knows what is meant. Indeed, such tacit understanding of perception is already implicit in the identification of something as a sense organ.

2.iii. Representation and Intentionality

In philosophy, the question, ‘What is perception?’ must be read as: ‘What *is meant by* “perception?”’. We answer that question in more detail by looking at the logic of our perception vocabulary, that is, by studying what can and cannot be said about seeing, feeling, hearing, etc.

This involves an understanding in terms of how a living being reaches out to its environment and finds out about it; or in terms of directedness, aboutness, or intentionality. But this also points to one way in which it may *not* be helpful to employ the concept of representation in the study of perception. Talk of representations is frequently adopted as a comfortable way to avoid discussion of the more fundamental concept of intentionality. As Slaby *et al.* suggest:

The leading cognitive science paradigm maintains that cognition essentially involves or is based on the capacity of agents to *represent* their world. [...] [But] ‘representation’ is just the now-fashionable, scientifically approved term for the ultimately significant relation between experiencing agents and the world they experience.³⁰

It seems to me that a crucial problem about the use of ‘representation’ in this context has to do with the ambiguous status of the concept. The term ‘representation’ is employed to cover both neural and mental representation. On the one hand, as was just argued, what are generally called ‘neural representations’ are simply physiological modifications of the brain. They are singled out by the neurobiologist on the basis of their *causal* role in the process of perception.³¹ On the other hand, it is often assumed that perceiving subjects use *mental* representations (or ‘images’³²) as their method to achieve the *right, truthful* kind of relation to the surrounding reality. Thus the relationship is conceived of in terms of correctness, not merely of causal ancestry.

The usual assumption by neurobiologists is that also mental representations *are needed* for normal perception to occur. Perception supposedly consists in the production of mental representations or images in the subjects’ minds. As Damasio puts it, there must be ‘a process whereby *neural* representations [...] become *images* in our minds’; images that ‘we each experience as belonging to us’.³³ According to Damasio, thinking involves the

³⁰ Slaby et al, 2006, 105.

³¹ I argued above that this process is implicitly seen as goal oriented. However, the official idea is that neural representations can be identified independently of this. Alternatively, it is assumed that goal-orientedness in itself can somehow be accounted for in terms of functional, and ultimately causal, concepts (see Carruthers 2000, 97-101).

³² Damasio 1996, 106.

³³ Damasio 1996, 90. Italics added.

manipulation of such images.³⁴ Mental representations are, in part, described as the content of our consciousness and, in part, as intervening (often unconscious) entities that link one mental content to another.

Damasio thinks that not only memories and fantasies, but also perception involves the manipulation of images, or representations. But it should be obvious that 'images' in these different cases must amount to very different things. Sometimes I literally think in images; say, as I try to solve some practical task. I might visualise the walk from one part of my home town to another. Here my mental images literally represent something. I am using them to stand proxy for the real things. But when I am actually walking and looking around, what I see is not images but buildings, cars, people, events, and whatever there is for me to look at. (And *pace* Damasio, I do not experience those things and events 'as belonging to me'.) One wonders why I should speak of 'seeing images' or 'using representations' at all in this case unless I have some theoretical fish to fry.

Thus it seems that talk of mental representations or images in the case of normal perception may be just a muddled way of pretending that the perceptual relation can be made explicit without relying on the concept of intentionality.

3.i. Descartes' Attempt to Reform the Relevant Perception Concepts.

The present role of the idea of representation in theoretical cognitive science obviously owes a great deal to Descartes.³⁵ Descartes would agree with Damasio and Churchland on three counts: (1) perception consists in the producing and manipulation of internal representations; (2) in perception, the relation between the representations and the external world is causal; (3) for these reasons, our everyday ideas about perception need serious revision.

³⁴ Damasio 1996, 89-90.

³⁵ Slaby et al, 2006, 106; Bennett & Hacker 2003, 2006; Lagerspetz 2002. Incidentally, this is one aspect of Descartes' thought that Damasio does *not* dismiss as an 'error'.

When, in his *Meditations*, Descartes set out first to doubt everything and then deductively to build up his knowledge on a secure basis, he was not simply reconstructing the same thing that his previous doubt had undermined. Among the crucial changes introduced along the way were the descriptions of seeing, hearing, and feeling as *modes of thinking* (*cogitandi quidam modi*³⁶). Further, he introduced the idea that these, and other alleged states of his soul, were more easily accessible to him and hence “more easily known than the body”.³⁷ His sensory perception consisted in the creation of representations or images that, unlike external objects, were directly accessible to him.

If you then use the word ‘seeing’ properly, according to Descartes what you *see* is simply a visual pattern. You can be mistaken about what it is that causes you to see it, but not about the pattern itself. You cannot be mistaken, and I cannot challenge you on the basis of what *I can* see. Your descriptions of what you see do not commit you to ideas about external objects that I might challenge, nor do they (for exactly that reason) constitute a challenge to my descriptions of my own visual experience.³⁸ If we go along with this, there will in fact even be a problem about claiming that we see the same thing at all, just as there would be about saying that two people have the same toothache.

Let me contrast this right away with our everyday concepts of perception. According to the everyday conception, perception is essentially an informative way of *standing in contact with* objects, facts, and events. For instance, to look is to establish visual contact, and to touch is to establish tactile contact. *What is perceived* is the object, fact, or event with which contact is established. Our everyday concepts do not entail that we cannot be mistaken about what we think we have perceived. On the contrary, we routinely assess and correct

³⁶ Descartes 1692, 13 (beginning of 3rd Meditation).

³⁷ “[N]otior quàm corpus”. Descartes 1692, 8 (title of 2nd Meditation).

³⁸ The essentially Cartesian commitment to methodological solipsism by contemporary philosophers of mind is discussed in Lagerspetz 2002.

people's beliefs about such things – including our own beliefs of what *we* have perceived – in the light of supplementary information. (Did I just see the Queen walking into the post office? What can be said for and against it?) As perception is a way of standing in contact with something, usually the question *what* we have perceived cannot be treated separately from the question what there was to perceive.

Not so for Descartes. For he does not think there is any *logical* relation between descriptions of what a person can be said to see, hear, or touch, and descriptions of what external objects there are to be seen, heard, and touched.

Descartes wants to say we actually see much less than we think. He has this in mind when he writes:

But if you look for more than vulgar knowledge, you should be ashamed to seek reasons for doubting in the forms of speech that the vulgar have invented.³⁹

By way of an example, Descartes describes his experience of a piece of wax. It is solid. It has a scent, a colour, a shape, and it gives a sound. Now he melts it by the fire. None of its original features remain, yet he will recognise all the same that the *same* wax is there. How does he do this? Descartes' point is that this cannot depend on anything he saw or felt in the wax, as the wax has now lost its all original perceptible features. On the contrary, he is in a position to look for similarities only because he already understands that the identity of the extended body is preserved over time. But this is optically speaking not something

³⁹ 'Sed pudeat suprà vulgus sapere cupientem, ex formis loquendi quas vulgus invenit dubitationem quaesivisse'. – Descartes 1692, 12.

he can *see*. Extended bodies are, he argues, “not perceived because they are seen or touched, but only because they are comprehended by thought”.⁴⁰

Cartesian accounts of the senses leave, as it were, ‘a residue of meaning’.⁴¹ There is a gap between what comes into the system – perceptual data of visual patterns, tactile stimulation, etc. – and what we seemingly get out of it: objects and events in our surroundings. The gap, for Descartes, is filled up ‘by mere understanding’ (*à solo intellectu*)⁴²; that is, by our rational knowledge of the nature of extended bodies.

To this there is a natural objection. We might say Descartes *saw* the piece of wax was melting. No one took it away or put something else in its place. If *we* had been there we might also have seen things going on that may appear too trivial even to mention. For instance, we would have seen that, when Descartes was holding the wax in his hand, he obviously had picked it up from somewhere.

To speak of ‘seeing’ in this way, rather than in Descartes’ way, means not to think of ‘seeing’ narrowly as an optical or neurobiological process. Thus the question what I see must not be confused with the optical question of what, at a given moment, meets my eye.⁴³ I will say I can see *a bit of wax*, not only part of it; not, for instance, only the surface facing me right now. In this sense, the question of what I can legitimately say I see is related to the question what, in the circumstances, would constitute acceptable grounds for beliefs. To speak of ‘seeing’ in this sense also involves the recognition that we must

⁴⁰ ‘[C]orpora non [...] ex eo percipi quòd tangantur, aut videantur, sed tantùm ex eo quòd intelligantur’. – Descartes 1692, 13 (end of 2nd Meditation).

⁴¹ Emiliani 2005.

⁴² Descartes 1693, 13.

⁴³ Compare with Descartes’ example: looking down from his window, he thinks there are men walking down the street in hats and capes. But what he actually sees is just hats and capes; there could be anything underneath (Descartes 1692, 12).

*learn to see things, sometimes even be trained to do so. In a forest, two persons may be exposed to exactly the same optical environment while only one of them is able to see the bird or mushroom in front of them.*⁴⁴

My 'seeing', in this sense, cannot be separated from my general practical engagement with my surroundings. This involves, for instance, the fact that I look for things, or that I may take a closer look, or move in space in order to see what is behind them. – Connecting to this, it is a significant fact about both human beings and many animals that our bodies, especially our heads, are almost constantly moving. (Consider small birds.) Usually we are not aware of this in our own case, but the results of such unself-conscious movement by the cameraman can be seen in unedited home videos. Thus the idea of a photography-like 'pure visual impression' is largely an abstraction. Visual perception involves systematic interplay of the body, the eye and the object.⁴⁵

3.ii. Cartesian vs. Non-Technical Concepts of Perception

Seemingly there are then two ways to go forward. One may go along with Descartes' restricted definition of 'seeing', 'hearing', and so forth. To see or hear is to take in perceptual data out of which one assembles a representation that, hopefully but

⁴⁴ P.F. Thomese writes in *Shadow Child*, in a passage that Ylva Gustafsson quotes in her paper: "One sees best through the eyes of another. 'Look', my father would say, and if I looked carefully I could see it too. We were outside, and what he pointed to in the bushes became birds. And the birds became different: chiffchaff, grosbeak, flycatcher. With my father's eyes I saw them, each and every one. Until he died. Suddenly they were gone, the trees were still, everything had lost its tongue." – Quote, Gustafsson 2006, from Thomese, P.F. (2005), *Shadow Child* (London: Bloomsbury) p. 53. – Thomese is speaking of how he learned to see birds as his father showed them to him. Gustafsson points out that their shared love of birds was, at the same time, a form that their love of each other would take. And this shared love taught Thomese to see birds properly. Gustafsson argues that our abilities to talk, think, or see are abilities that we acquire (and perhaps ultimately only can retain?) in the context of our meaningful relations with others. The important point in the present context is that 'seeing' involves much more than the taking in of optical data.

⁴⁵ Also see Gibson 1979.

contingently,⁴⁶ is correlated with facts of the external world. In that case, the ‘residue of meaning’ that connects perceptual data with ideas about facts and objects in one’s surroundings must be supplied by cognitive schemes, internal mapping, etc., – which are now staple fare in cognitive psychology. The other possibility is to accept a wider concept of perception, where we let the word ‘perception’ include a much larger part of the *practical engagement* by a living being with the world that surrounds it.⁴⁷ Here the question of what I can see in a given situation is typically *not* the optical question of what meets my eye, but rather it involves a huge repertoire of things that I can do, recognise, and remember. For instance, I can see that someone has just had a haircut.

But I hope it is obvious at this stage that no actual choice exists here. For in fact those who study perception empirically *have* already accepted the non-Cartesian conception, which is the implicit background of their investigation. They accept that ‘perception’ is an achievement term. Two people can perceive the same thing from different points of view. They can also fail to do so, and they can be more or less skilled at perceiving what lies in front of them. They can be held responsible for not seeing or hearing what they ought to have seen or heard.

Explicitly or implicitly, neurobiologists work with our ordinary concept of perception, even if sometimes their official story is different. Connecting to Peter Winch again, the philosopher’s task in this situation is not to put the clock back or forward, but only “to make sure that the clock is telling the right time, whatever it may prove to be”.⁴⁸

⁴⁶ Not assuming God necessarily to guarantee the correctness of or clear and distinct perception.

⁴⁷ Marx, indeed, went as far as saying: ‘My relation to my environment is my consciousness’ – Karl Marx, *The German Ideology*, quote Avineri 1968, 71.

⁴⁸ Winch 1958/1990, 2.

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